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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/840,003	05/06/2004	Kari Laurila	460-009132-US (C01)	7659

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PERMAN & GREEN  
425 POST ROAD  
FAIRFIELD, CT 06824

EXAMINER
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STORM, DONALD L

ART UNIT	PAPER NUMBER
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2654

DATE MAILED: 09/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/840,003

Applicant(s)

LAURILA ET AL.

Examiner

Donald L. Storm

Art Unit

2654

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on May 6, 2004 through July 19, 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 12-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 12-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 May 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☒ Certified copies of the priority documents have been received in Application No. 09/482,277.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Priority*

1. The Applicant has not complied with one or more conditions for receiving the benefit of an earlier filing date under 35 U.S.C. 120 as follows:

This application claims the benefit of a prior filed nonprovisional application under 35 U.S.C. 120, 121, or 365(c). Copendency between the current application and the prior application is required. This application is not entitled to the benefit of the prior-filed application because the application 09/482,277 became abandoned as of February 9, 2004, and this application was filed May 6, 2004. Since the applications are not copending, the benefit claim to the prior-filed nonprovisional application is improper.

Since this application appears to be in fact a duplicate of a former application that was abandoned prior to the filing of the second case, the substitution of the word --substitute for-- for “continuation and claims priority from” is required since the term “substitute” has official recognition. The applicant is required to make appropriate corrections unless the applicant can establish copendency between the applications.

The use of the term “substitute” to designate an application which is in essence the duplicate of an application by the same applicant abandoned before the filing of the later case finds official recognition in the decision, *Ex parte Komenak*, 1940 C.D. 1, 512 O.G. 739 (Comm'r Pat. 1940). The notation on the file wrapper (See MPEP § 202.02) that one case is a “substitute” for another is printed in the heading of the patent copies. A “substitute” does not obtain the benefit of the filing date of the prior application.

### *Response to Amendment*

2. The PRELIMINARY AMENDMENT, filed May 6, 2004, is present in the application file, and it has been considered by the Examiner.

3. The SUPPLEMENTAL PRELIMINARY AMENDMENT, filed July 19, 2004, is present in the application file, and it has been considered by the Examiner.

*Specification*

4. The specification is objected to because an application that is not entitled to the benefits of a prior filed nonprovisional application under 35 U.S.C. 120, 121, or 365(c) should not be called a "continuation," "division," or "continuation-in-part," of the prior application, nor claim priority from the prior application. (See page 2 of PRELIMINARY AMENDMENT, filed May 6, 2004).

Since this application appears to be in fact a duplicate of a former application that was abandoned prior to the filing of the second case, the substitution of the words --substitute for-- for "continuation and claims priority from" is required since the term "substitute" has official recognition. The applicant is required to make appropriate corrections.

5. The Examiner notes, without objection, the possibility of informalities in the specification. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. The Applicant's cooperation is requested to consider correcting minor errors of which the Applicant may become aware during normal review and revision of the disclosure.

In PRELIMINARY AMENDMENT, filed May 6, 2004, at page 2, should Detailed Description of the Invention have been inserted at page 4, line 8? The Applicant may wish to submit instructions delete the heading paragraph Detailed Description of the Invention at page 4, line 26. The Applicant may wish to submit further instructions to insert the heading paragraph Detailed Description of the Invention at page 4, line 8.

***Claim Informalities***

6. Claim 12, and by dependency claims 13 and 15, are objected to under 37 CFR 1.75(a) because the meaning of the phrase “the user” (line 3) needs clarification. Because no user was previously recited, it may be unclear as to what element this phrase refers. To further timely prosecution and evaluate prior art, the Examiner has interpreted this phrase to refer to --a user--.

7. Claim 12, and by dependency claims 13 and 15, are objected to under 37 CFR 1.75(a) because the meaning of the phrase “the voice” (line 3) needs clarification. Because no voice was previously recited, it may be unclear as to what element this phrase refers. To further timely prosecution and evaluate prior art, the Examiner has interpreted this phrase to refer to --the speech--.

8. Claim 14 is objected to for the same reasons as claim 12 because the limitations are recited using obviously similar phrases.

9. Claim 14 is objected under 37 CFR 1.75(a) to because the scope must be interpreted when the symbols making up the claim limitations are not defined in the claim. The symbol “*k*” should be defined in the claims at least the first time used, if a concise and accurate definition is available. No new matter may be introduced into the disclosure as filed.

10. Claim 16, and by dependency claim 17, are objected to for the same reasons as claim 12 because the limitations are recited using obviously similar phrases.

11. Claim 16, and by dependency claim 17, are objected under 37 CFR 1.75(a) to because the scope must be interpreted when the symbols making up the claim limitations are not defined in the claim. The symbols “*t*” and “*t-1*” should be defined in the claims at least the first time used, if a

concise and accurate definition is available. No new matter may be introduced into the disclosure as filed.

12. Claim 18, and by dependency claim 19, are objected to for the same reasons as claim 12 because the limitations are recited using obviously similar phrases.

13. Claim 20, and by dependency claim 21, are objected to under 37 CFR 1.75(a) because the meaning of the phrase "the user" (line 3) needs clarification. Because no user was previously recited, it may be unclear as to what element this phrase refers. To further timely prosecution and evaluate prior art, the Examiner has interpreted this phrase to refer to --a user--.

14. Claim 20, and by dependency claim 21, are objected to under 37 CFR 1.75(a) because the meaning of the phrase "said energy level threshold value" (multiple occurrences) needs clarification. Because no user was previously recited, it may be unclear as to what element this phrase refers. To further timely prosecution and evaluate prior art, the Examiner has interpreted this phrase to refer to --an energy level threshold value--. The phrase "said energy level threshold value" also appears in claim 21.

15. The Examiner notes, without objection, that the following phrases provide an inherent antecedent reference by their recitation in place: (claim 12) "the frequency", "the signals", "the energy levels", "the length", "the energy level", "the number"; (claim 13) "the quantity", "the other"; (claim 14) "the frequency", "the signals", "the energy levels", "the length", "the energy level", "the number"; (claim 15) "the environmental"; (claim 16) "the frequency", "the signals", "the energy levels", "the length", "the energy level", "the number"; "the environmental"; (claim 18) "the frequency", "the signals"; (claim 20) "the frequency", "the signals", "the energy levels",

“the energy level”, “the number”. The Applicant may wish to consider if the phrases clearly and without confusion recite the claimed subject matter that the Applicant wants.

16. The form of the claims does not follow Office practice. While there is no set statutory form for claims, the present Office practice is to insist that each claim must be the object of a sentence starting with “I (or we) claim”, “The invention claimed is”, or the equivalent. The Applicant is encouraged to insert a desired introduction before claim 1. If, at the time of allowance, appropriate terminology is not present, it is inserted by the technical staff. See MPEP § 608.01(m).

#### ***Claim Rejections - 35 USC § 102***

17. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

#### **Laurila**

18. Claims 12-21 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Laurila et al. [International Publication Number WO 00/42600]. See claims 1-11.

#### ***Claim Rejections - 35 USC § 103***

19. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

*Iso-Sipilä and Viikki*

20. Claims 12 and 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iso-Sipilä, J., K. Laurila, R. Hariharan, and O. Viikki, "Hands-Free Voice Activation in Noisy Car Environment," Proc. Eurospeech 97, Rhodes, Greece, 1997, pp. 2375-2378, in view of Viikki, Olli, D Bye, and Kari Laurila, "A Recursive Feature Vector Normalization Approach for Robust Speech Recognition in Noise," Proc. 1998 IEEE Int. Conf. Acoust., Speech, Sig. Proc., ICASSP '98, 12-15 May 1998, vol. 2, pp. 733-736.

21. Regarding claim 12, Iso-Sipilä and Viikki describe and make obvious the claimed limitations as a whole, because Iso-Sipilä [at section 1] describes speech recognition and utterance detection approaches that describe the claimed limitations recognizable to one versed in the art as the following elements:

speech commands uttered by a user [at section 5, as a command word preceded and followed by silence];

dividing the frequency spectrum of the signal into two or more subbands [at section 5, as an algorithm creates subbands (frequency bands)];

samples of the signals in the subbands [at section 5, as decimated MFCC];

determining energy levels of the subbands based on the samples [at section 5, as an algorithm creates energies of subbands by MFCC band energies];

determining a power threshold value [at section 5, as an algorithm determining Pthr];



comparing the energy levels with the threshold [at section 5, as an algorithm finding when each subband energy falls below the threshold];

the comparison results produce a pause detecting result [at section 5, in other words, a pause detection requirement is the subband energy falls below the threshold];

a detection time limit is determined [at section 5, as an amount of frames when the energy value remains below the threshold is required];

a detection quantity is determined [at section 5, determine enough individual subbands that satisfy the end-of-utterance detection criterion separately to detect the end of utterance];

the calculation of the pause length in a subband is started when the energy of a subband falls below the threshold [at section 5, as find the time period when each subband energy falls below the threshold to detect a pause after something has been uttered];

a subband specific detection is performed when the calculation reaches the detection time limit [at section 5, as detect the end of utterance for the subband when the energy value remains below the threshold for the required number of frames];

how many subbands were below the threshold longer than the detection time limit is examined, wherein a pause decision is made if that number is greater than or equal to the detection quantity [at section 5, as if enough individual subbands satisfy the end-of-utterance detection criterion separately, then the end-of-utterance is detected].

Iso-Sipilä does not explicitly describe that the voice is converted into an electrical signal and the electrical signal is processed by the algorithm for pause detection, and storing subband signals.

To create the energy subbands using MFCC to produce band energies, Iso-Sipilä [at section 6] indicates that the procedure found in a reference article [reference 7] was used. Reference 7 is Viikki, and Viikki describes:

converting the speech uttered into an electrical signal [at section 1, as a microphone in speech recognition experiments];

storing samples of the subband signals at intervals [at section 4.1, as buffer to buffer feature vectors (0.2 secs.)].

To the extent that a microphone to convert speech to electrical signals for processing is not necessarily included to feed voice commands as electrical signals to Iso-Sipilä's algorithm, it would have been obvious to one of ordinary skill in the art of automatic speech recognition at the time of invention to include Viikki's concept of inputting speech for recognition through a microphone because machine execution of algorithms eliminates repetitive manual calculations. In view of Iso-Sipilä's choice to include Viikki's MFCC front end to recognition processing, it would have been obvious to one of ordinary skill in the art of speech recognition at the time of invention to include Viikki's concepts of microphone input and of storing the feature vectors because Viikki points out that buffering the feature vectors is necessary to achieve good recognition.

22. Claim 20 sets forth limitations similar to claim 12. Iso-Sipilä and Viikki describe and make obvious the limitations as indicated there. Iso-Sipilä also describes:

recognizing the speech utterance [at section 2, as recognize HMMs in the proper order of the recognized utterance];

setting an activity threshold for determining the pause as a predetermined number of subbands [at section 5, determine enough individual subbands that satisfy the end-of-utterance detection criterion separately to detect the end of utterance];

23. Regarding claim 21, Iso-Sipilä also describes:

setting a predetermined time threshold [at section 5, as an amount of frames when the energy value remains below the threshold is required];

counting the number of subbands in which the energy is below the threshold for at least the time limit [at section 5, as if enough individual subbands satisfy the end-of-utterance detection criterion separately, then the end-of-utterance is detected].

### ***Conclusion***

24. The following references here made of record are considered pertinent to applicant's disclosure:

Dubnowski et al. [US Patent 4,015,088] compares speech energy in time intervals to thresholds that are adapted using lesser of two maximum values which then determine a maximum energy during silence.

Forse [US Patent 4,912,766] describes storing subband samples, determining their energies, determining a power threshold, and comparing to determine finish points of speech.

Vilmur et al. [EP 0 380 563 B1] determines speech intervals and nonspeech intervals, including determining stored frame data of tonal noise by counting high-energy, high frequency subbands for the frame.

25. Any response to this action should be mailed to:

#### **Mail Stop Amendment**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**or faxed to:**

(571) 273-8300, (for both formal communications intended for entry and for informal or draft communications, but please label informal fax as "PROPOSED" or "DRAFT")

Patent Correspondence delivered by hand or delivery services, other than the USPS, should be addressed as follows and brought to U.S. Patent and Trademark Office, Customer

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Alexandria, VA 22314

26. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donald L. Storm, of Art Unit 2654, whose telephone number is (571) 272-7614. The examiner can normally be reached on weekdays between 8:00 AM and 4:30 PM Eastern Time. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (571) 272-7602.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Inquiries regarding the status of submissions relating to an application or questions on the Private PAIR system should be directed to the Electronic Business Center (EBC) at 866-217-9197 (toll-free) or 703-305-3028 between the hours of 6 a.m. and midnight Monday through Friday EST, or by e-mail at: [ebc@uspto.gov](mailto:ebc@uspto.gov). For general information about the PAIR system, see <http://pair-direct.uspto.gov>.

September 14, 2005

*Donald L. Storm*  
Donald L. Storm  
Patent Examiner  
Art Unit 2654